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US 3749820

(58) Field of search
E1D
Selected US specifications from IPC sub-class E04H

(54) Clips, with two mounting sections primarily for securing electrified wires to supports

(57) A clip for securing electrified wire 34 to a fence post (31 Fig. 9) or other support 9 and having two mounting sections 1, 2, either of which can be used for attaching the clip to a support. Each mounting section has connecting means whereby that particular mounting section can be attached to a support, and each also has retaining means for receiving and holding a portion of a length of wire 34. The arrangement is such that the retaining means of one mounting section is used to hold the wire if the other mounting section is attached to the support. Each mounting section has individual characteristics which makes it more adaptable than the other for attachment to a particular type of support.

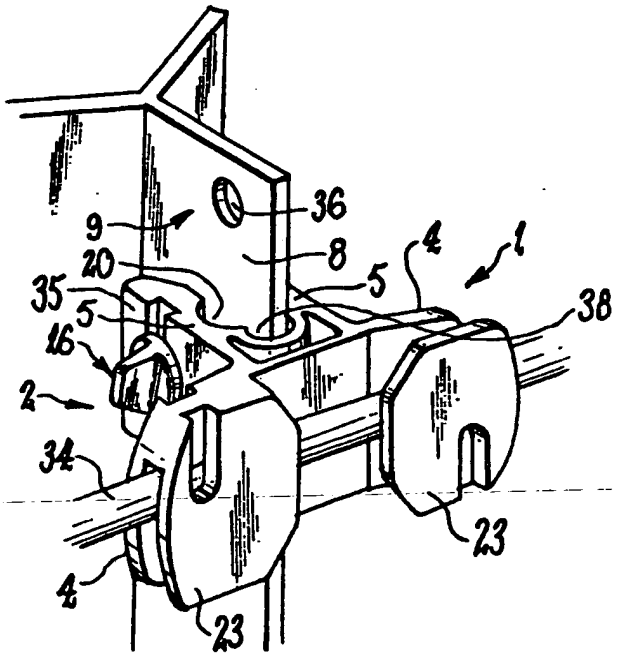

FIG 11

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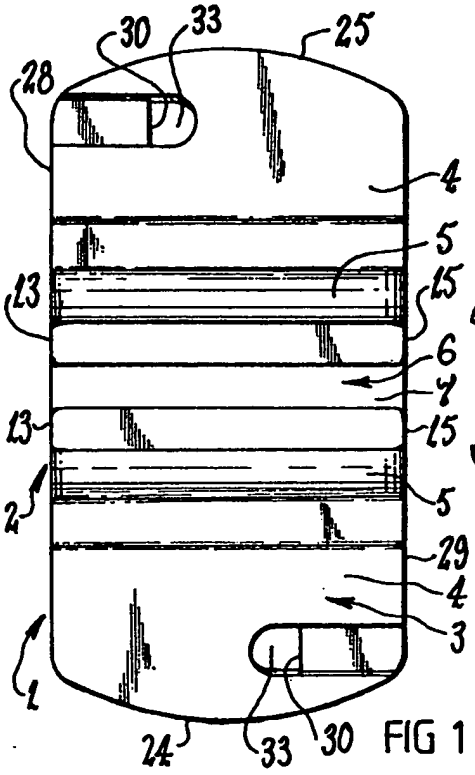

FIG 1

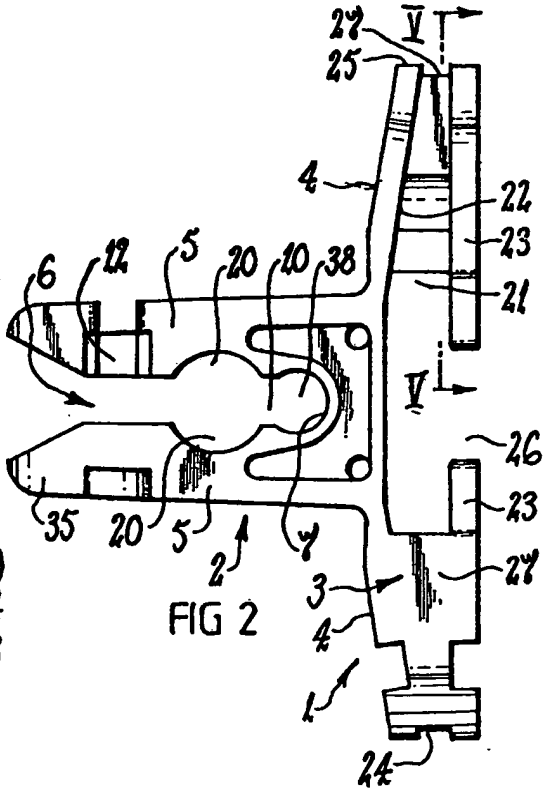

FIG 2

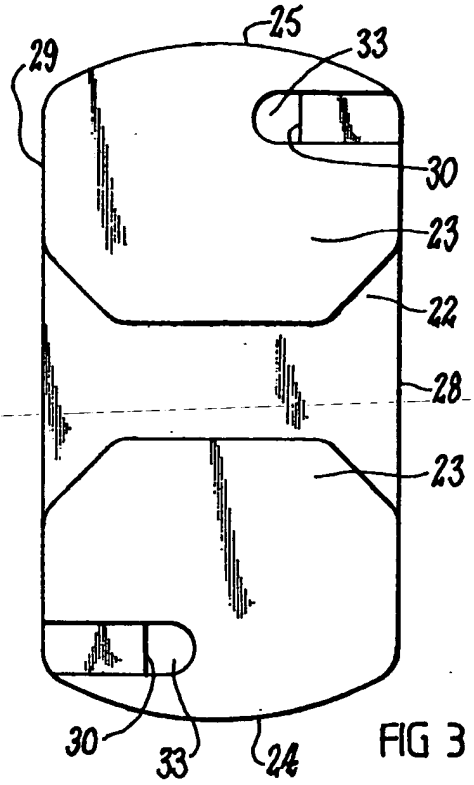

FIG 3

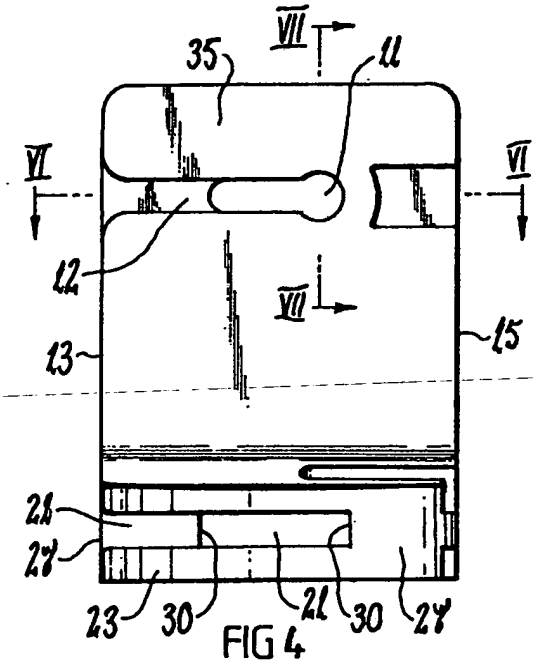

FIG 4

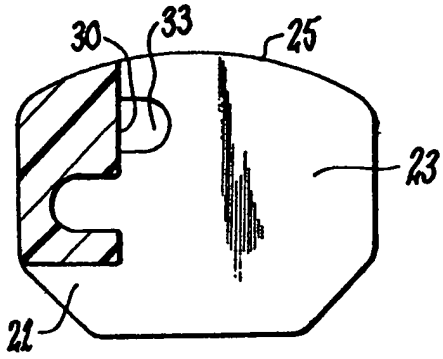

FIG 5

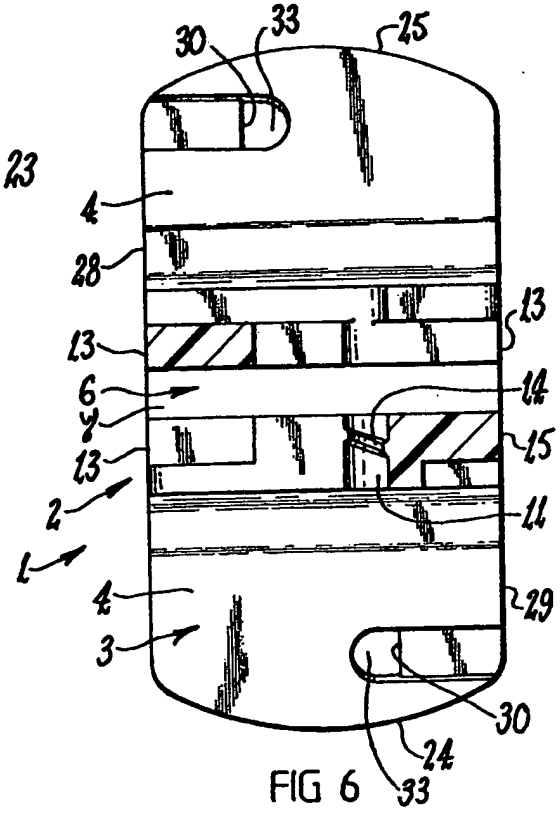

FIG 6

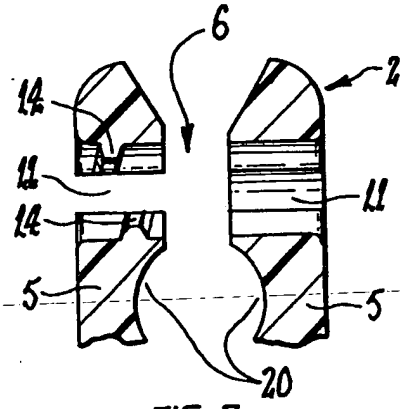

FIG 7

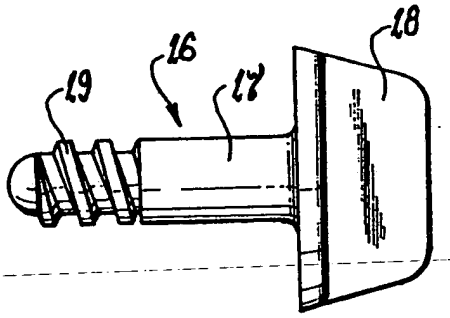

FIG 8

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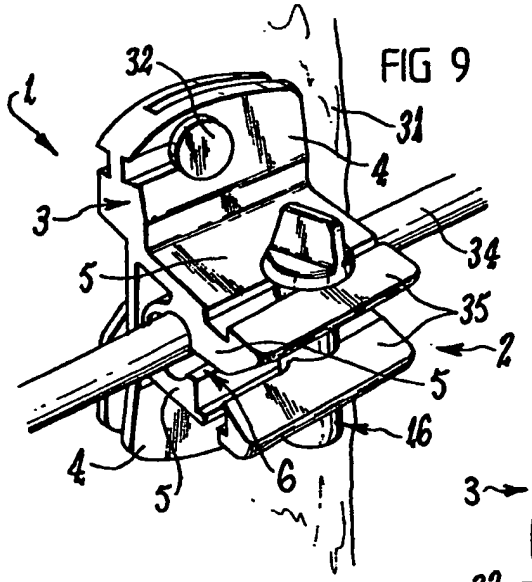
FIG 9



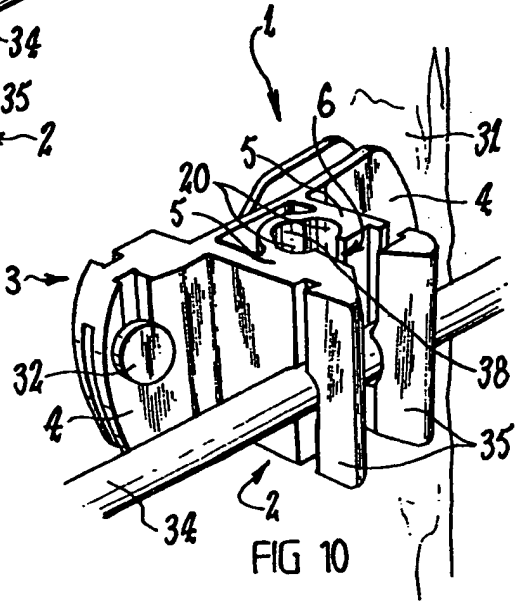


FIG 10

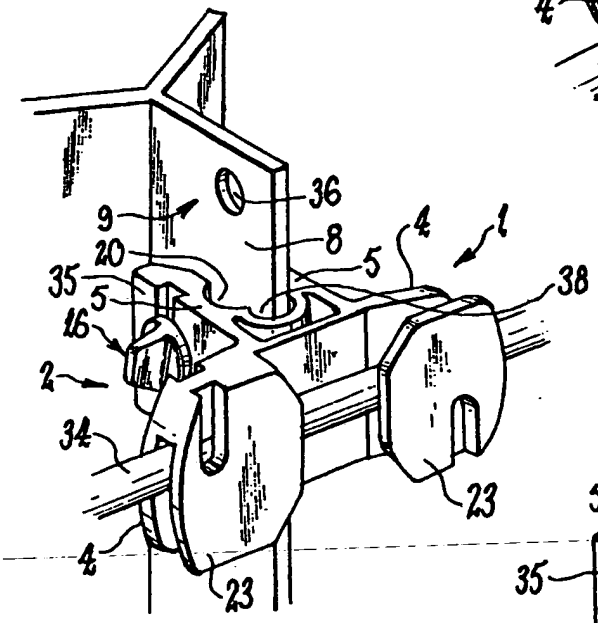


FIG 11

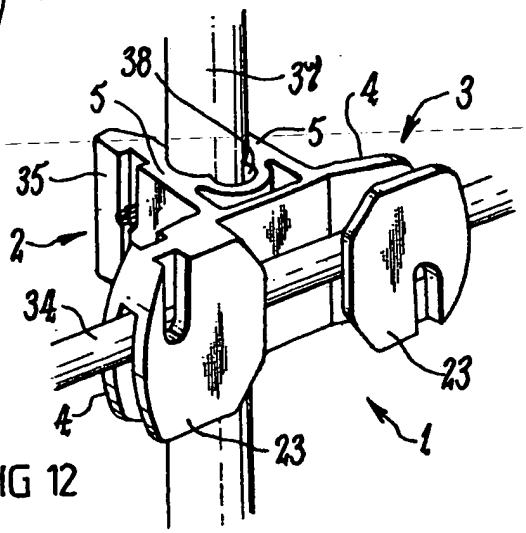


FIG 12

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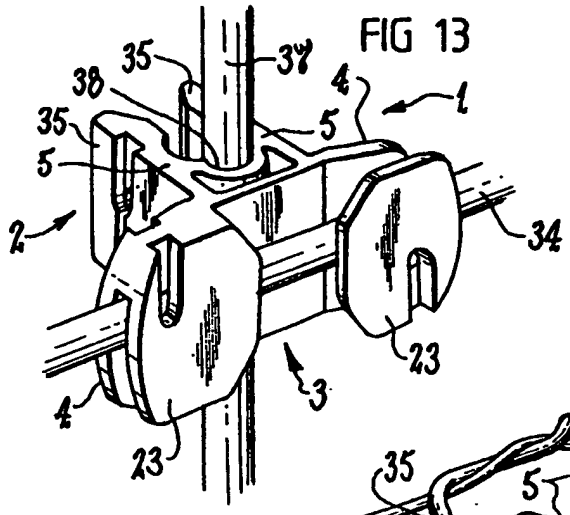
FIG 13



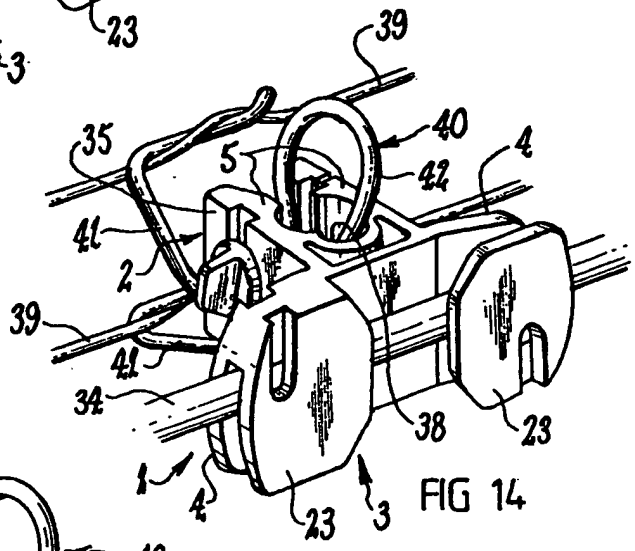


FIG 14

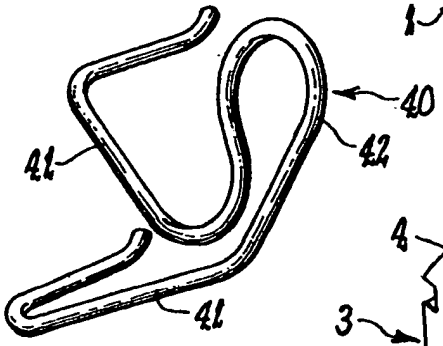
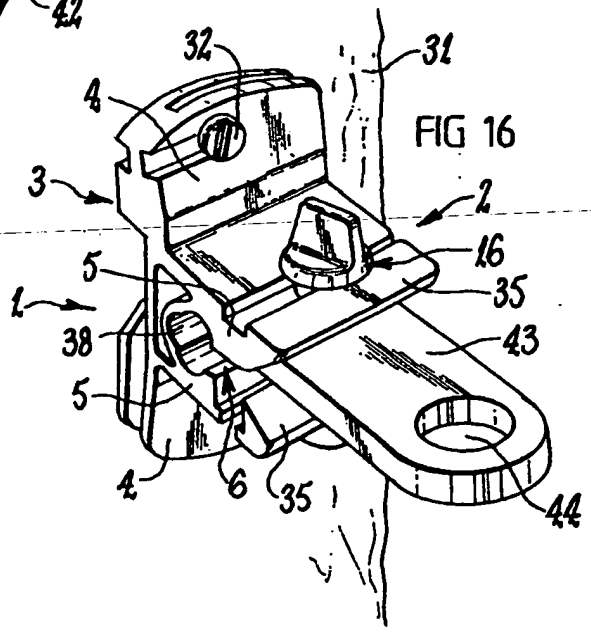


FIG 15

FIG 16



SPECIFICATION

Clips, primarily for securing wires to supports

This invention relates to a clip for securing wire to a support structure. The invention is especially suited for securing electrified fence wire to a post or other support and it will be convenient to hereinafter describe the invention with particular reference to that example application.

Securing clips for electrified fence wire are presently available in several different forms so as to permit such clips to be used in a variety of different applications. Some of those forms are usable with timber fence posts and other are usable with metal posts such as star-pickets. One of the timber post forms enables relatively simple separation of the wire from the clip, which is a requirement under some circumstances, whereas another of that form provides a more permanent type of attachment with the wire.

The need to provide different clips to suit different circumstances adds to manufacturing and supply costs. It also results in some inconvenience for the user because of the need to ensure correct selection at the time of purchase.

It is an object of the present invention to provide an improved wire clip which is usable in a variety of circumstances. It is a further object of the invention in a particular form to provide a wire clip which is usable with both timber and metal fence posts.

According to the present invention, there is provided a clip for securing wire to a support including, a primary mounting section, a secondary mounting section connected to said primary mounting section, connecting means provided on each said mounting section whereby the respective said mounting section can be attached to a said support, and retaining means provided on each said mounting section for receiving part of a length of wire and holding that wire against separation from said clip and against engagement with a said support to which the other said mounting section is attached.

In a preferred form, each of the two mounting sections has individual characteristics which make that mounting section more suited than the other for attachment to a particular type of support. In one particular arrangement, one of the mounting sections has a substantially broad rear surface which is adapted for location against a surface of a support for attachment thereto, and the other mounting section has two spaced portions each of which is adapted to locate on opposite sides of a support for attachment thereto.

An embodiment of the invention is described in detail in the following passages of the specificaton which refer to the accompanying drawings. The drawings, however, are merely illustrative of how the invention might be put into effect, so that the specific form and arrangement of the various features as shown is not to be understood as limiting on the invention.

In the drawings:

Figure 1 is a front elevation view of a clip according to one embodiment of the invention,

Figure 2 is a side elevation view of the clip shown in Fig. 1,

Figure 3 is a rear elevation view of the clip shown in Fig. 1,

Figure 4 is another side elevation view of the clip shown in Fig. 1, but viewed at 90° to the view according to Fig. 2,

Figure 5 is a cross-sectional view taken along line V–V of Fig. 2,

Figure 6 is a cross-sectional view taken along line VI–VI of Fig. 4,

Figure 7 is an enlarged cross-sectional view taken along line VII–VII of Fig. 4,

Figure 8 is an elevation view of one form of lock pin adapted to be used with the clip of Fig. 1,

Figures 9 to 14 and 16 show various alternative uses of the clip according to Fig. 1,

Figure 15 shows a wire member for use in the application according to Fig. 14.

A wire clip according to the invention is preferably formed of an electrically insulating material and in the form shown in the drawings is moulded in a single piece from polypropylene or other suitable plastics material. The clip is characterised in that it has a plurality of wire retaining means so as to make it adaptable to a variety of circumstances. That characteristic can be achieved in many different ways and consequently the particular embodiment of the invention hereinafter described in detail is to be understood to be an example embodiment only.

The example clip shown includes two interconnected mounting sections 1 and 2, each of which is of plate-like form. The mounting section 1 constitutes a primary mounting section and the mounting section 2 constitutes a secondary mounting section. The primary mounting section 1 has a plate-like base 3 which is preferably substantially rectangular but could have any other peripheral shape. The secondary mounting section 2 extends across and projects outwardly from a front surface 4 of the base 3, hereinafter referred to as front and rear sides respectively.

Separate wire retaining means as hereinafter described is associated with each mounting section 1 and 2, and each of those mounting sections 1 and 2 has respective connecting means whereby the clip can be attached to a fence post or other support. In the particular embodiment under consideration, the primary mounting section 1 is operative when the clip is attached to a wooden post (Figs. 9 and 10)

and the secondary mounting means 2 is operative when the clip is attached to a metal post (Fig. 11).

The secondary mounting section 2 as shown includes two wall portions 5 which are arranged in opposed spaced relationship to form a slot 6 between them. An inner end of each wall portion 5 is attached to the base 3 and a base surface 7 of the slot 6 is formed by an interconnection between the wall portions 5 which is adjacent that base 3. It is preferred that the wall portions 5 are located on opposite sides on a central axis of the clip base 3 and that the space between them is sufficient to neatly receive a web 8 of a star-picket 9 as shown in Fig. 11. Although the wall portions 5 will be hereinafter described as extending across the complete width of the clip base 3, that is not an essential requirement.

It is preferred that the wire retaining means of the secondary mounting section 2 has two parts which are respectively operative under different conditions as hereinafter described. As a matter of convenience those parts will be hereinafter referred to as inner and outer parts respectively. The inner part of the retaining means is formed by the space or slot 6 between the two wall portions 5 and particularly the portion 10 (Fig. 2) of that slot 6 which is adjacent the clip base 3. As previously described, the slot 6 also forms part of the connecting means of the secondary mounting section 2. The outer part of the retaining means as shown is formed by an opening 11 which extends transversely through each wall portion 5 at a location remote from the clip base 3 and an access slot 12 in each wall portion 5 which connects the respective opening 11 to a side edge 13 or 15 of the wall section 5.

The two wall section openings 11 are in substantial alignment as shown by Figs. 4 and 7, and it is preferred that each has a diameter substantially greater than the width of the respective access slot 12. As also shown in Fig. 7, one of the openings 11 preferably has a screw-thread 14 formed therein for a reason hereinafter made clear. Each access slot 12 preferably extends substantially parallel to the slot base surface 7 and in a direction opposite to that of the other slot 12. That is, as best seen in Fig. 5, the two access slots 12 extend through opposite side edges 13 and 15 of their respective wall sections 5. It is also preferred that each access slot 12 terminates at the respective opening 11. The section of each wall portion 5 which forms the outermost side of the respective slot 12, forms a finger 35 which functions as hereinafter described.

A lock pin 16 (Fig. 8) may be provided for projection through the wall openings 11 to thereby capture a member located within the slot 6 and inwardly of the openings 11. The pin 16 as shown has a cylindrical shank 17 which fits within the openings 11 and an enlarged head 18 at one end of the shank 17. If desired, the pin 16 could be formed of a plastics material and it may be moulded integral with the clip body so as to be connected thereto through a flexible strap (not shown) to prevent loss after repeated use. In the preferred arrangement shown, the pin 16 has a screw-thread 19 formed on the end portion of the shank 17 which is remote from the head 18. That thread 19 is cooperable with the thread 14 of the opening 11 as shown in Fig. 7 so as to permit positive retention of the pin 16 on the mounting section 2.

It is also preferred that a groove 20 is formed in each of the opposed surfaces of the two wall portions 5 at a location between the inner and outer ends of those wall portions 5. The grooves 20 extend substantially parallel to the base surface 7 and are opposed so as to present an enlarged space into which a rod-like support can snap-engage as shown in Fig. 12.

The wire retaining means of the primary mounting section 1 as shown includes two access slots 21 (Figs. 2, 4 and 5) which are arranged in spaced relationship so that each can receive a respective part of a length of wire. In the construction shown, each slot 21 is formed between a rear surface 22 of the clip base 3 and a respective flange 23 which overlies a respective portion of the surface 22 in opposed spaced relationship. Each flange 23 is located at or adjacent a respective opposite side 24 and 25 of the base 3 and a space 26 (Fig. 2) is provided between the adjacent edges of those flanges 23. Each flange 23 is connected to the base 3 through a respective web portion 27, and the two web portions 27 are preferably located adjacent a respective one of another two opposite sides 28 and 29 of the base 3. The width of the slots 21 and the size of the space 26 between the flanges 23 are such as to receive a wire therein. A side 30 of each web portion 27 forms a surface which abuts against a wire located in the slots 21 and those surfaces 30 face in opposite directions.

If the clip is to be secured to a timber post 31 as shown in Figs. 9 and 10, it may be secured so that the wall portions 5 either extend substantially vertical (Fig. 10) or substantially horizontal (Fig. 9). The selection will depend on whether it is intended to use the inner or outer part of the wire retaining means of the mounting section 2. With either selection, the flanges 23 of the mounting section 1 provide a back surface of the clip for engaging the timber post 31 and it is preferred that they are substantially flat for that purpose, but nevertheless sufficiently flexible to be able to bear against a contoured surface. Attachment of the clip to a timber post 31 could be effected through the use of nails 32 as shown

and the base 3 may be provided with holes 33 to receive those nails 32. Such holes 33 may or may not extend completely through the base 3 and comprise or form part of the connecting means of the primary mounting section 1.

In the event that the clip is attached with the wall portions 5 substantially horizontal as in Fig. 9, the wire 34 to be retained is simply located within the slot 6 between those wall portions 5 so that it extends beyond the opposite edges 13 and 15 of those wall portions 5. Lateral movement of the wire 34 out of the slot 6 may be prevented by projecting the lock pin 16 through the wall section openings 11 so that it bridges the slot 6 and presents a barrier to outward movement of the wire 34. It will be appreciated that the pin 16 is adapted for removal from that bridging position so as to allow for separation of the wire 34 from the clip if desired.

When the clip is attached to a timber post 31 with the wall portions 5 substantially vertical as shown in Fig. 10, the wire 34 can be passed through the wall portion openings 11 to extend transverse to those wall portions 5. With that arrangement, one of the fingers 35 extends downwards while the other extends upwards, and the wire 34 is engageable on opposite sides by the end of the respective one of the slots 12. Location of the wire 34 in that position is effected by flexibly twisting it so as to be able to pass upwards through one of the access slots 12 and downwards through the other. Separation of the wire 34 can be achieved through reverse twisting movement of the wire 34.

Attachment of the clip to a metal star-picket 9 may be effected as shown in the Fig. 11, by locating a web 8 of the picket 9 within the slot 6 between the two wall portions 5 so that a hole 36 through that web 8 is aligned with the wall portion openings 11. The lock pin 16 can then be inserted through the openings 11 and the web hole 36 to secure the clip to the star-picket 9. When the clip is so secured, the access slots 21 at the rear of the mounting section 1 are substantially vertical and one faces upwardly whereas the other faces downwardly. A wire 34 is retained by the clip as a result of being located within the slots 21 behind each of the two flanges 23, and it may be convenient to so locate the wire 34 prior to securing the clip to the star-picket 9.

Assuming the clip is free of the star-picket 9, it can be placed on a wire 34 by locating that wire 34 within the space 26 between the two flanges 23. If the clip is then turned in one particular direction, each of two longitudinally spaced sections of the wire 34 will be moved into a respective one of slots 21 and is thereby located behind a respective one of the flanges 23. Such turning movement is stopped when the clip has been moved through approximately 90° because at that time one of the web portions 27 engages one side of the wire 34 and the other engages an opposite side thereof. At that stage the wire 34 extends substantially transverse to the access space 26 and consequently is not easily removed from the clip without reverse turning movement of the clip. Such turning movement is prevented when the clip is secured to a star-picket 9 as described above.

The clip can be also attached to a rod-like support 37 as shown in Figs. 12 and 13. Fig. 12 shows attachment to a support 37 of relatively large diameter which is snap-engaged within the grooves 20 of the slot 6. Fig. 13 shows a smaller diameter support 37 snap-engaged within the innermost portion 38 (Fig. 2) of the slot 6. In each case the lock pin 16 may be used to more securely capture the support 37 within the slot 6, but that is not absolutely essential. Also, in each case, the wire 34 is captured in the manner described in connection with Fig. 11.

The clip has yet another function and that is to provide part of a wire standoff which operates to hold an electrified wire 34 away from one or more strands 39 of non-electrified wire (Fig. 14). For that purpose the clip is attached to another member 40 (Fig. 15) in the form of a bent section of high tensile wire, for example. According to the arrangement shown, that wire member 40 has two arms 41 which diverge outwardly from an interconnecting looped portion 42 arranged to extend substantially transverse to the mean direction of the two arms 41. A hooked formation 43 may be provided at the outer end of each arm 41. Such a wire member 40 and its manner of attachment to a fence is known.

The wire member 40 is attached to the clip by locating the looped portion 42 within the slot 6 between the wall portions 5 and then projecting the lock pin 16 through the two wall portions 5 so as to effectively prevent separation of the wire member 40 from the clip. Fig. 14 shows how the resulting assembly can be used as a wire standoff.

Still another possible use of the clip is as an anchor for a spring gate or other member. Such an application is shown in Fig. 16 and in that particular arrangement requires addition of a short link 43 having a hole 44 at each end. The link 43 is attached to the clip by locating one end of the link 43 within the slot 6 and projecting the lock pin 16 through the hole 44 at that end.

It will be apparent from the foregoing description that a clip according to the invention provides a substantial improvement over prior clips, particularly in its ability to adapt to a wire variety of circumstances of use. Furthermore, the clip is of simple and yet effective construction.

Various alterations, modifications and/or additions may be introduced into the construc-

tions and arrangements of parts previously described without departing from the spirit or ambit of the invention as defined by the appended claims.

CLAIMS

1. A clip for securing wire to a support including, a primary mounting section, a secondary mounting section connected to said primary mounting section, connecting means provided on each said mounting section whereby the respective said mounting section can be attached to a said support, and retaining means provided on each said mounting section for receiving part of a length of wire and holding that wire against separation from said clip and against engagement with a said support to which the other said mounting section is attached.

2. A clip according to claim 1, wherein each said mounting section is a plate-like member which is arranged angularly relative to the other said mounting section.

3. A clip according to claim 2, wherein said secondary mounting section extends across a surface of said primary mounting section and projects outwardly from that surface.

4. A clip according to any preceding claim, wherein the retaining means of said secondary mounting section has two parts each of which is operative to receive and hold a said wire in a respective one of two different dispositions of said primary mounting section relative to a said support.

5. A clip according to any preceding claim, wherein the retaining means of said primary mounting section includes two access slots which are arranged in spaced relationship and each of which is arranged to receive a respective part of a length of wire, each said slot has a base surface which is adapted to abut against said wire and which faces in a direction opposite to that of the other said base surface.

6. A clip according to claim 5, wherein said primary mounting section includes a plate-like base having a front surface and a rear surface, said secondary mounting section projects outwards from said front surface, and each said access slot is formed between said rear surface and a respective one of two flanges connected to said mounting section base in laterally spaced relationship.

7. A clip according to claim 6, wherein each said flange is located in spaced opposed relationship to said rear surface and adjacent a respective one of two opposite sides of said mounting section base, each said flange is connected to said mounting section base through a respective web portion which forms the base surface of the respective said access slot, and each said web portion is located at or adjacent a side of the respective said flange which is remote from the corresponding side of the other said flange.

6. A clip according to any preceding claim, wherein said connecting means of the primary mounting section includes at least one hole formed through that section for receiving a screw, nail, or other fastening means.

9. A clip according to any preceding claim, wherein said secondary mounting section includes a pair of wall portions which are laterally spaced to form an open-ended slot between them, said open-ended slot forming part of the connecting means of said secondary mounting section, each said wall portion having an inner end at or adjacent said primary mounting section and an outer end remote frm the primary mounting section, and said wall portions are interconnected at or adjacent their inner ends to form a base surface of said connecting means slot.

10. A clip according to claim 10, wherein a groove is formed in each of the opposed surfaces of said wall portions at a location between the inner and outer ends thereof, and said grooves are in opposed relationship and extend substantially parallel to the base surface of said connecting means slot to define a support receiving facility.

11. A clip according to claim 9 or 10, wherein an opening is formed through each said wall portion adjacent the outer end thereof, said openings are substantially aligned, and a lock pin is receivable in said openings to capture a member located in said connecting means slot between that pin and said base surface of the connecting means slot.

12. A clip according to claim 11, wherein one said opening is screw-threaded to cooperatively engage with a thread formed on said lock pin.

13. A clip according to any one of claims 9 to 12 when appended to claim 4, wherein said connecting means slot forms one said part of said secondary mounting section retaining means.

14. A clip according to any one of claims 9 to 13, wherein said retaining means of the secondary mounting section includes two wire receiving slots each of which is formed in a side edge of a respective one of said wall portions, the said side edge of one said wall portion being opposite to that of the other said wall portion, and each said wire receiving slot has a blind end against which a said wire can bear.

15. A clip according to claim 14, wherein each said wire receiving slot extends substantially parallel to said base surface of the connecting means slot.

16. A clip according to claim 14 or 15 when appended to claim 11 or 12, wherein each said opening forms part of a respective one of said wire receiving slots.

17. A clip according to any preceding claim, wherein said clip is formed as a single

piece from a plastics material.

18. A clip according to any preceding claim, wherein each said mounting section has individual characteristics which make it more suited than the other mounting section for attachment to a particular type of support.

19. A clip according to claim 18, wherein said primary mounting section has a substantially broad rear surface which is adapted for location against a surface of a support for attachment thereto, and said secondary mounting section has two spaced portions each of which is adapted to locate on opposite sides of a support for attachment thereto.

20. A clip substantially as herein particularly described with reference to what is shown in the accompanying drawings.

21. A clip according to any preceding claim when used as shown in any one of Figs. 9 to 16 of the accompanying drawings.

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